

7-22-02 50222 401-072402 #1/PROV

Please type a plus sign (+) inside this box: → ☒

PTO/SB-16 (8-00)

Approved for use through 10/31/2002 (M5 0651-0032)

Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PROVISIONAL APPLICATION FOR PATENT COVER SHEET

This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53 (c).

INVENTOR(S)					
Given Name (first and middle (if any))		Family Name or Surname		Residence (City and either State or Foreign Country)	
Richard		Sandor		Chicago, IL 60610	
<input checked="" type="checkbox"/> Additional Inventors are being named on the 1 separately numbered sheets attached hereto					
TITLE OF THE INVENTION (250 characters max)					
Emission Reduction and Trading Program					
CORRESPONDENCE ADDRESS					
Direct all correspondence to:					
<input checked="" type="checkbox"/> Customer Number		32042		Place Customer Number Bar Code Label here	
OR Type Customer Number here					
<input checked="" type="checkbox"/> Firm or Individual Name		J. Clay Matthews, Patton Boggs, LLP			
Address		8484 Westpark Drive			
Address		8 th Floor			
City		McLean	State	Va	ZIP 22102
Country		USA	Telephone	(703) 744-8000	Fax (703) 744-8001
ENCLOSED APPLICATION PARTS (check all that apply)					
<input checked="" type="checkbox"/> Specification Number of Pages		23		<input type="checkbox"/> CD(s), Number	
<input checked="" type="checkbox"/> Drawing(s) Number of Sheets		2		<input type="checkbox"/> Other (specify)	
<input type="checkbox"/> Application Data Sheet. See 37 CFR 1.76					
METHOD OF PAYMENT OF FILING FEES FOR THIS PROVISIONAL APPLICATION FOR PATENT (check one)					
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.					
<input type="checkbox"/> A check or money order is enclosed to cover the filing fees					
<input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge filing fees or credit any overpayment to Deposit Account Number:				502228	
<input type="checkbox"/> Payment by credit card. Form PTO-2038 is attached.				FILING FEE AMOUNT (\$) 160.00	
The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.					
<input checked="" type="checkbox"/> No.					
<input type="checkbox"/> Yes, the name of the U.S. Government agency and the Government contract number are:					

Respectfully submitted:

SIGNATURE

Date

7/19/02

TYPED or PRINTED NAME J. Clay Matthews, Ph.D.

REGISTRATION NO.

50735

(if appropriate)

Docket Number:

TELEPHONE (703) 744-8000

USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

This collection of information is required by 37 CFR 1.51. The information is used by the public to file (and by the PTO to process) a provisional application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 8 hours to complete, including gathering, preparing, and submitting.

00297401 .072002

PROVISIONAL APPLICATION COVER SHEET

Additional Page

Approved for use through 10/1/2002 (Rev. 05/1/2002)
 Patent and Trademark Office, U.S. DEPARTMENT OF COMMERCE
 Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Docket Number		Type a plus sign (+) inside this box →	+
INVENTOR(S)/APPLICANT(S)			
Given Name (first and middle if any)	Family or Surname	Residence (City and either State or Foreign Country)	
Miko Alice	Walsh LeBlanc	Downers Grove, IL 60516 New York, NY 10023	

Number 1 of 1

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

FEE TRANSMITTAL for FY 2002

Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 160.00

Complete If Known

Application Number	
Filing Date	July 19, 2002
First Named Inventor	Sandor, Richard
Examiner Name	Not Yet Assigned
Group / Art Unit	
Attorney Docket No	

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit card ☐ Money ☐ Other ☐ Non-cash Order

☒ Deposit Account

Deposit Account Number	50226
Deposit Account Name	Patton Duggs, LLP

The Commissioner is authorized to: (check all that apply)
☐ Charge fee(s) indicated below ☐ Credit any overpayments
☐ Charge any additional fee(s) during the pendency of this application
☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account

FEE CALCULATION

1. BASIC FILING FEES

Large Entity	Small Entity	Fee Code	Fee (\$)	Fee Description	Fee Paid
101	740	201	370	Utility filing fee	
103	330	206	165	Design filing fee	
107	610	207	255	Plant filing fee	
108	740	208	370	Religious filing fee	
114	160	214	80	Provisional filing fee	160.00

SUBTOTAL (1)

(\$160.00)

2. EXTRA CLAIM FEES

Total Claims	Extra Claims	Fee from below	Fee Paid
Independent Claims	0	0	0
Multiple Dependent	0	0	0

Large Entity

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description
103	16	203	9	Claims in excess of 20
102	84	202	42	Independent claims in excess of 3
104	280	204	140	Multiple dependent claim, if not paid
108	84	208	42	** Release independent claims over original patent
110	16	210	9	** Release claims in excess of 20 and over original patent

SUBTOTAL (2)

(\$0)

**or number previously paid, if greater. For Releases, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity	Small Entity	Fee Code	Fee (\$)	Fee Description	Fee Paid
105	130	205	65	Surcharge - late filing fee or cash	
127	90	227	25	Surcharge - late provisional filing fee or cover sheet	
130	130	130	130	Non-English specification	
147	2,520	147	2,520	For filing a request for re-examination	
112	920*	112	920*	Requesting publication of "IR" prior to Examiner action	
113	1,940*	113	1,940*	Requesting publication of "IR" after Examiner action	
115	110	215	55	Extension for reply within 1st month	
116	130	216	263	Extension for reply within 2nd month	
117	620	217	460	Extension for reply within 3rd month	
118	1,440	218	720	Extension for reply within 4th month	
121	1,940	221	640	Extension for reply within 5th month	
119	320	219	160	Notice of Appeal	
120	320	220	160	Filing a brief in support of an appeal	
121	280	221	140	Request for oral hearing	
128	1,510	128	1,510	Petition to institute a public use proceeding	
149	110	249	55	Petition to revive - unavailable	
141	1,280	241	640	Petition to revive - unintentional	
142	1,280	242	640	Utility issue fee (or release)	
143	460	243	230	Design issue fee	
144	620	244	310	Plant issue fee	
122	130	122	130	Positions to the Commissioner	
123	50	123	50	Processing fee under 37 CFR 1.17 (g)	
126	180	126	180	Submission of Information Disclosure Sheet	
581	40	581	40	Recording each patent assignment per property (times number of properties)	
148	740	248	370	Filing a submission after 6-month rejection (37 CFR § 1.129(a))	
149	740	249	370	For each additional invention to be examined (37 CFR § 1.129(b))	
171	740	271	370	Request for Continued Examination (RCE)	
169	900	169	600	Request for expedited examination of a design application	

Other fee (specify) _____

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3)

(\$0)

SUBMITTED BY

Name (Print/Type)	J. Clay [Signature]	Registration No. (if any/Agent)	50,735	Telephone	703-744-0000
Signature	[Signature]	Date	July 18, 2002		

Complete, if applicable

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO 2023.
 Burden Hour Statement: This form is estimated to take 0.2 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

UNITED STATES PATENT APPLICATION

OF: Richard Sandor, Mike Walsh, and Alice LeBlanc

FOR: EMISSION REDUCTION AND TRADING PROGRAMBACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a method of applying a capped emissions trading system to greenhouse gas emissions, based on per project carbon credits. The method generates standardized protocols and establishes efficient Market systems with low transaction costs.

2. Description of Relevant Art

[0002] The demand for action among the public, governments, and the private sector to take cost effective steps to address the threat of climate change has grown steadily over the past decade. Many of the major industrial nations including many of the international energy and industrial companies have long sought the design of a greenhouse gas emissions trading program that can provide corporations and others an organized, Market-based mechanism for reducing global warming gases. This endeavor presents a means for effectively addressing climate change while offering its owners and members a significant commercial opportunity.

[0003] The scientific community is warning that rapid increases in the concentration of greenhouse gases in the earth's atmosphere is caused by human activity -- mainly fossil fuel combustion and deforestation -- and is introducing the risk of fundamental and costly changes in the earth's climate system. The risks include more severe drought/precipitation cycles; longer and more extreme heat waves; spread of tropical diseases; damage to vegetation and agricultural systems;

threats to coastlines and property due to higher sea levels and storm surges. Independent of the scientific debate, the perception that global warming presents a problem that needs to be addressed is widespread. This concern was first crystallized in the 1992 United Nations Framework Convention on Climate Change, in which countries agreed to prevent or minimize the causes of climate change and mitigate its adverse effects taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost.

[0004] The United States signed the Framework Convention at Rio de Janeiro, and, subsequent to ratification by the U.S. Senate and by 185 other countries, the agreement entered into force in 1994. There is also growing recognition that Market-based emissions trading systems offer the least cost method for managing environmental risks. Emissions trading is not just a theoretically attractive concept. The environmental and economic success of the U.S. sulfur dioxide allowance trading program to reduce acid rain, as well as other similar Market, provides clear evidence of the benefits of emissions trading on a large-scale. Emissions trading introduces scarcity by establishing limits on overall emissions, specifying firm-level limits, and allowing those who can cut emissions at low cost to make extra cuts. Companies facing high costs to cut emissions can comply by purchasing tradable emission rights from those who make extra cuts. The Market in a property-like instrument emission allowances helps assure efficient use of the limited resource (the environment) and yields a price that signals the value society places on use of the environment. That price represents the financial reward paid to those who reduce emissions, and also indicates the value of creating innovative pollution reduction technique.

[0005] While national and sub-national governments have been studying greenhouse gas emissions trading programs, for several years private sector leaders in many countries have financed mitigation projects and conducted trading in informal "carbon credits". A World Bank study reports that this nascent over-the-counter Market has included several dozen significant trades. The study found that,

in the absence of any regulatory framework, the dollar volume of over-the-counter transactions has already surpassed \$100 million. Furthermore, The Economist magazine projects an annual volume of trading ranging from \$60 billion to \$1 trillion. Numerous governments have moved beyond planning and are implementing formal greenhouse gas Market, including the U.K., Denmark, and the Netherlands, as well as Massachusetts and New Hampshire. A large number of states, provinces, exchanges and multilateral institutions have made detailed preparations for trading. It is in this context, recognition of a serious environmental risk, desire for least-cost responses, increasing regulation worldwide, and demands from stakeholders - that the present invention offers an attractive strategic choice for the private sector.

Background on Market-based solutions to environmental problems

[0006] The first major environmental success of the emissions trading concept was demonstrated in the 1980's U.S. program to phase out lead from motor fuel. This was followed by the highly successful U.S. Environmental Protection Agency sulfur dioxide (SO₂) emissions trading program, which continues to prove the concept on a large scale. To reduce acid rain, an overall cap on SO₂ emissions was imposed on the dirtiest power plants. Utilities that find it expensive to cut sulfur emissions can buy allowances from utilities that make extraordinary cuts at low cost. While the first "compliance" year was 1995, trading started several years earlier. The first EPA auction was administered by the Chicago Board of Trade in 1993. Through private transactions and annual auctions, electric utilities trade emission allowances to arrive at an efficient use of mitigation resources.

[0007] The SO₂ program has been extremely successful: emissions were reduced faster than required and costs are far below most forecasts. There has also been steady growth in the trading of allowances, from 700,000 tons in 1995 to approximately 12 million tons in 2001. The Market has now reached a value of approximately \$2 billion each year for registered trades.

[0008] Application of flexible, Market-based mechanisms for reducing greenhouse gas emissions has achieved widespread intellectual and political support. This broad acceptance of emissions trading was reflected in the Kyoto Protocol, which established several emissions trading mechanisms. Industrialized countries that become Parties to this treaty (which has not yet entered into force), will accept legally binding commitments to reduce emissions to levels below those experienced in 1990. There are growing signs of the emergence of a Market for greenhouse gas emissions, despite uncertainties regarding the Kyoto Protocol. These initiatives come from the public, private and non-profit sectors, as well as partnerships among these sectors.

[0009] It is clear that the demand to reduce greenhouse gases will grow over time. Taking advance action to limit greenhouse gas emissions and create value for these reductions makes good business sense. However, these emerging Market, and an international Market linking them, are still in their infancy. This results in large transaction costs and Market inefficiencies. Examples of barriers to trading are regulatory uncertainty, lack of a clear, widely-accepted definition of the commodity, lack of standards for monitoring, verification, and trade documentation, lack of standards for eligibility of project-based emission offsets, and lack of organized Market and clear Market prices. It is against this background, and to address these problems, that the present invention was conceived.

3. Summary of the Invention

[0010] It is therefore an object of this invention to provide a method for greenhouse gas reduction through a commodity based trading program.

[0011] It is another object of this invention to apply the concept of a capped emissions trading system to greenhouse gas emissions.

[0012] It is still another object of this invention to standardize protocols and systems required for an efficiently functioning gas reduction Market with low transactions costs.

[0013] It is still another object of this invention to provide an expandable program capable of supporting more participants and emission sources.

- [0014] It is still another object of this invention to provide a mechanism for achieving price discovery.
- [0015] It is still another object of this invention to allow flexibility in the methods, location and timing of emission reductions so that greenhouse gas emissions can be reduced cost effectively;
- [0016] It is still another object of this invention to facilitate trading with low transaction costs;
- [0017] It is still another object of this invention to build Market institutions and infrastructure and develop human capital in greenhouse gas emissions trading;
- [0018] It is still another object of this invention to provide improved emissions management;
- [0019] It is still another object of this invention to integrate with other international or sovereign trading regimes.
- [0020] It is still another object of this invention to develop Market architecture that rewards innovative technology and management including sustainable farming and forestry practices.
- [0021] An electronic mechanism for hosting green house gas commodity trading will provide participants with a central location that facilitates trading, publicly reveals price information, and contributes to the broad objectives of the emission reduction plan. The system will reduce the cost of locating trading counter parties and finalizing trades, an important benefit in a new Market. The system may also be used as the platform for conducting the periodic auctions. The Green House Gas electronic Market could host trading in standardized contracts that, for example, provide a uniform trade size, pricing terms and payment requirements. The green house gas trading system should have the following core features, low cost to users; easy-to-use for participants, allow for real-time trading and price information, and readily interface with the registry accounts of participants in the commodity Market.
- [0022] These and other objects and advantages of the present invention will become apparent from the subsequent detailed description of the preferred embodiment and the claims taken in conjunction with the accompanying drawings.

4. Brief Description of the Drawings

[0023] The preferred embodiments are illustrated in the drawings in which like reference numerals refer to like elements and in which:

[0024] Figure 1 is a flow diagram illustrating the relationships between the Registry Accounts of the present invention, the Emissions Database, and Traders.

[0025] Figure 2 is a flow diagram illustrating the commodity auction of the present invention.

5. Detailed Description of the Invention

Scope of the Market

[0026] Current estimates for annual global man-made CO₂ emissions are 26 billions tons, of which 6.5 billion tons (or 25%) originate in the U.S. The top fifty U.S. electric generation sources annually emit more than 2 billion tons.

[0027] Several independent organizations have estimated the size of the global greenhouse gas emissions trading Market and formed forecasts of Market prices for CO₂ emission reductions.

Tables 1 and 2 summarize their findings.

Table 1

Estimates of Market Size

Source	Projection of Size of Greenhouse Gas Emissions Trading Market
World Bank	\$10 billion b 2005
US Council on Foreign Relations	\$2.3 trillion of trades completed b 2012
Energy Policy Journal	\$24-37 billion of trades completed annually during the period 2008-2012
Resource and Energy Economics	\$46.6 billion of trades annually (unspecified time frame)
The Economist	\$60 billion - \$1 trillion of trades annually (unspecified time frame)
Lockwood Consulting	\$1.2 trillion Market by 2008 - estimated \$30 billion/year worth of global reductions

Sources: "Value at Risk: Climate Change and the Future of Governance - CERES Sustainable Governance Project Report", April 2002; Reuters, April 7, 2000

Table 2
Projected Prices for CO₂ Emission Credits

Source	Market Scenario	Projected Price (per ton of CO ₂)
Wharton Econometric Forecasting Associates	Limited trading	\$54*
Charles River Associates	Limited trading	\$27
Charles River Associates	Full trading	\$16
Rand Environmental Policy Center	Trading	\$13-\$27
Lockwood Consulting	Trading	\$20
Environmental Financial Products LLC	Trading	\$5.50

* Projected price in 2010

Source: Richard L. Sandor and Michael J. Walsh, "Kyoto or Not: Opportunities in Carbon Trading are Here", *Environmental Quality Management*, Volume 10, Number 3, Spring 2001.

System Registry

[0028] The registry serves as the official record of emission allowance and offset holdings of each participant in the commodity Market. Trades become officially acknowledged for compliance purposes only when they are transferred across accounts in the registry. Subsequent to the end of a compliance year, each emission source must designate for retirement a quantity of emission units equal to total emissions of that participant during the compliance year.

[0029] Upon enrollment as a Market participant, an emission source is allocated a time stream of original issue allowances generally issued in years. Regardless of the method of trading employed, all deliveries of emission allowances and offsets occur by having the transferor instruct the registry to move allowances or offsets from its account to the account of the transferee. Subsequent to year-end, the emission source must transfer a quantity of appropriate vintage allowances or offsets equal to its total emissions during the prior year to the retirement account. The registry is designed to have the following features: Secure Internet access by participants to their own accounts; Use of unique, individualized serial numbers that follow internationally accepted design standards; Serial number system that allows for later identification of original recipient of issued emission allowances and offsets; view-only accessibility of accounts by the public; full secure access by Market

administrator; expandable; able to interface with registries being developed in other green house gas Market now being designed; direct interface and match-up with emissions database; designed trading platforms to directly interface with the registry.

Annual Emission Allowance Auctions

[0030] Annual auctions of green house gas emission allowances in the Market program will provide an orderly mechanism for assisting the Market. By publicly revealing prices, the auctions provide critical information to participants. Prices help participants formulate reasonable private trading terms and, importantly, provide signals indicating which internal green house gas mitigation actions are economically logical and which actions are best performed by other participants who face lower mitigation costs.

[0031] The annual auctions conducted in the U.S. EPA's SO₂ allowance program (and administered by the Chicago Board of Trade) both prove the value of periodic auctions and provide a sound model for the Market. In addition, the SO₂ auction model will be very familiar to electric power companies, who represent an important sector for the Market. Electricity generators have seven years of experience with the procedures, style and consequences of the auctions. This experience will help facilitate effective utilization of the Market auctions. Salient features of the proposed Market auction structure are presented in Table 1.

Table 1- Salient Features of Proposed Climate Exchange Auctions

Dates	Bids due March 25, Offers due March 15
Percentage of allowances withheld for auction	2%
Vintages auctioned	Allowances usable in the current year ("spot" auction), and two-years in the future ("forward" auction)
Administrator	To be determined
Deadlines	April 1, 2002 (annual)
Pricing Style	Discriminating
Proceeds	Returned pro rata to participants

Market Electronic Trading System

[0032] An electronic mechanism for hosting Market trading will provide participants with a central location that facilitates trading, publicly reveals price information, and contributes to the broad objectives of the pilot. The system will reduce the cost of locating trading counter parties and finalizing trades, an important benefit in a new Market. The system may also be used as the platform for conducting the periodic auctions.

[0033] As such systems have taken root in a variety of commodity Market, business-to-business (B2B) systems and consumer-oriented systems, their effectiveness in spreading information and hosting active trading has been proven. The Market electronic Market could host trading in standardized contracts that, for example, provide a uniform trade size, pricing terms and payment requirements.

[0034] The Market trading system has the following core features: low cost to users; easy-to-use for participants; allow for real-time trading and price information; readily interface with the Market registry.

Gases Covered

[0035] Emissions of the following greenhouse gas emissions from facilities owned by Market Members will be included, as applicable: carbon dioxide (CO₂); methane (CH₄); nitrous oxide (N₂O); hydrofluorocarbons (HFCs); perfluorocarbons (PFCs); and sulfur hexafluoride (SF₆).

[0036] All greenhouse gases will be converted to carbon dioxide equivalent using the one hundred year global warming potential values published by the Intergovernmental Panel on Climate Change (IPCC).

Instruments, Vintages, Banking

[0037] The instruments are: Greenhouse Gas Emission Allowances (GGEA); Certified Emission Offsets (CEO) generated by mitigation projects; and Certified Early Action Credits (CEAC).

[0038] Each instrument represents one metric ton of CO₂ and will be designated with a specific serial number and annual vintage. Each instrument is recognized as equivalent when surrendered for compliance. Instruments may be used in compliance in their designated vintage year or in later years.

Market Emission Baseline

[0039] Each Market Member's emission baseline is the average of its emissions during selected previous years. Baselines will be adjusted to reflect acquisition or disposition of facilities.

[0040] Market Emission Reduction Schedule, Greenhouse Gas Emission Allowances Allocations

[0041] Market Members will be issued Greenhouse Gas Emission Allowances, at the inception of the program, for the four-year period in an amount reflecting the Market emission reduction schedule:

Year	Market Emission Reduction Schedule, Greenhouse Gas Emission Allowances Allocations
1	1% below participant's baseline
2	2% below participant's baseline
3	3% below participant's baseline
4	4% below participant's baseline

Economic Growth Provisions (EGPSM)

[0042] The maximum amount of CO₂ equivalent emissions that will be recognized in determining the annual true-up for each Market Member will be 2% above that participant's baseline emission level during year 1 and year 2, and 3% above baseline during year 3 and year 4.

Annual True-up

[0043] Subsequent to each compliance year, each Market Member must surrender any combination of Greenhouse Gas Emission Allowances, Certified Emission Offsets and Certified Early Action Credits in an amount equal to CO₂ equivalent emissions released from that Member's included facilities during the compliance year (subject to the Economic Growth Provisions and constraints on the use of CEOs and CEAC).

Registry and Electronic Trading Platform

[0044] An internet-accessible Market Registry will be managed and administered by the Market and will contain all Greenhouse Gas Emission Allowances, Certified Emission Offsets and Certified Early Action Credits. The Market Registry will be used as the official holder of record and transfer mechanism and will be integrated with the Market electronic trading platform. All transactions involving these instruments must occur on the Market electronic trading platform.

Auctions

[0045] Market-administered auctions will occur on a regularly scheduled basis.

Facilities Included, Emissions Monitoring

[0046] Market Members primarily engaged in electric power production will include in their baseline and quarterly emission reports CO₂ emissions from all power generation facilities having a rated capacity of 25 megawatts or larger. These Members may opt-in emissions from facilities having rated capacity less than 25 megawatts, but must include all such facilities if this option is chosen. Electric power generating units will use CO₂ emissions data from continuous emission monitors (CEMs) as reported to the U.S. Environmental Protection Agency. In other cases where CEM data is not available, such Members will quantify CO₂ emissions by using the fuel consumption methods contained in the U.S. Code of Federal Regulations 40 CFR Part 75 or methods equivalent to 40 CFR Part 75.

[0047] Market electric power sector Members may opt-in SF₆ emissions from electric power transmission equipment. Emissions from such systems will be quantified using protocols provided by the U.S. Environmental Protection Agency. These Members may also opt-in emissions from vehicles they own and operate or lease by using the protocols developed by the World Resources Institute/World Business Council for Sustainable Development (WRI/WBCSD) initiative.

[0048] Other Market Members, including Members in the forest products, chemicals, cement, manufacturing, and municipal sectors will report green house gas emissions as follows: CO₂

emissions from stationary source fossil fuel combustion will be quantified using the protocols developed by the WRI/WBCSD; Process emissions (e.g. N₂O, PFCs and CO₂) will be quantified using the applicable WRFWBCSD protocols; CO₂ emissions from vehicles will be included in the Member's baseline and quarterly emission reports if these emissions are greater than 5% of total entity-wide emissions and represent an integral part of the Member's operations. Otherwise, Market Members have the option to include emissions from vehicles in their baseline emissions and quarterly emission reports. Vehicle emissions will be quantified using the WRI/WBCSD protocols.

[0049] Market will specify methods for monitoring emissions for the following sectors and activities: oil and gas sector; gas pipelines; landfill methane; net carbon stocks in above-ground biomass in industrial forests; offset projects including reforestation, renewable energy and fuel switching.

[0050] Greenhouse Gas Emission Allowances issuance for carbon sequestration by Market Members in the forest products.

[0051] Market Members in the forest products sector that have wood harvesting operations will quantify and report net changes in carbon stocks (expressed in metric tons of CO₂ equivalent) held in above-ground biomass on land owned by the Member. These Members will be issued on an annual basis.

[0052] Greenhouse Gas Emission Allowances in an amount reflecting net increases in stored carbon during the 1-4 years time period. These Members must surrender GGEAs, CEOs or CEAC on an annual basis in an amount reflecting net decreases in stored carbon during the four year time period. The calculation of changes in carbon stocks will be adjusted to sector reflect acquisition or disposition of forest land.

Emissions Reporting and Verification

[0053] Market Members must submit quarterly emission reports. For Market Members primarily engaged in electric power production the quarterly reports must be signed by the Member's

designated representative as defined in Title IV of the 1990 Clean Air Act Amendments. For other Market Members the quarterly reports must be signed by a corporate officer. Unless specified otherwise, reporting on offset projects and forest carbon storage by Members in the forest products sector will occur annually. Emissions and offset project reports and their underlying data will be subject to verification and audits. Verification and audit activities will be undertaken by entities approved by the Market.

Expansion of Market Membership

[0054] The Market participant base will be enlarged as additional entities seek to enroll. Expansion will be managed with a view to furthering the goals of the Exchange and avoiding price congestion. New Members will be bound to the same terms and obligations as Original Members.

Certified Emission Offsets (CEO)

[0055] Eligible projects can be recorded in the Market Registry and will be issued Certified Emission Offsets on the basis of mitigation tonnage realized during the four year period.

[0056] Market will specify project eligibility, project baselines, quantification, monitoring and verification protocols. CEOs will be issued after mitigation occurs and required documentation is presented to Market. With the exception of reforestation and afforestation projects, which will be eligible if undertaken on or after January 1, 1995, projects in the specified categories will qualify if they were placed into operation on or after January 1, 1999. In some cases, offset projects undertaken by Market Members prior to 1999 may be eligible under the Certified Early Action Credits provisions described below.

[0057] The initial categories of eligible offset project categories are: landfill methane destruction in the U.S.; agricultural methane destruction in the U.S.; carbon sequestration in U.S. reforestation projects; carbon sequestration in U.S. agricultural soils; fuel switching, landfill methane destruction, renewable energy and forestry projects in Brazil.

[0058] CEOs from projects undertaken in Mexico and Canada will be integrated into the program during 2003. Potentially eligible projects located outside the U.S., Mexico, Canada and Brazil may be registered as early as 2003, with the allowed use of such offsets to be determined by the Standing Committee on Certified Emission Offsets described below. That Committee will also recommend additions to the list of eligible offset project types and locations, and will consider recommending automatic recognition of CEOs from mitigation realized by approved Clean Development Mechanism projects. The minimum amount of CEO issuance to any project or group of projects in any single category is 10,000 tons CO₂ equivalent per year. Individual projects that achieve mitigation quantities of less than 10,000 tons CO₂ equivalent per year must be combined with other projects within the same project category by a Market registered aggregator. Trading can occur in quantities less than 10,000 tons.

Certified Landfill Offsets U.S. (CLOs) (U.S.)

[0059] Landfill methane collection and combustion systems placed into operation at locations on or after January 1, 1999 and not required by law under New Source Performance Standards will be issued Certified Landfill Offsets on the basis of tons of methane destroyed, net of CO₂ released upon combustion, during the years 2003 through 2006. Certified Landfill Offsets will be issued at a net rate of 18.25 tons CO₂ for each ton of methane combusted.

Certified Agricultural Methane Offsets (CAMOs) (U.S.)

[0060] Agricultural methane collection and combustion realized by manure digesters placed into operation in the U.S. on or after January 1, 1999 will be issued Certified Agricultural Methane Offsets annually on the basis of tons of methane destroyed, net of CO₂ released upon combustion, during the years 2003 through 2006. CAMOs will be issued at a net rate of 18.25 tons CO₂ for each ton of methane combusted.

Certified Forestry Offsets (CFOs) (U. S.)

[0061] Qualifying reforestation and afforestation projects initiated on or after January 1, 1995 will be issued Certified Forestry Offsets on the basis of increases in tons of CO₂ equivalent of carbon storage realized during the 2003-2006 period. Market will specify project eligibility, project baselines, quantification, monitoring and verification protocols.

Certified Soil Offsets Certified Soil Offsets (CSOs) (U.S.)

[0062] Certified Soil Offsets will be issued annually for agricultural soil carbon sequestration activities in designated states, counties and parishes in the U.S. Midwest and Mississippi delta regions. Certified Soil Offset will be issued at a rate of 0.5 metric tons CO₂ per acre per year in cases where farmers commit to continuous no-till through 2006. Certified Soil Offsets will be issued at a rate of 0.75 metric tons CO₂ per acre per year in cases where farmers commit to maintain through 2006 soil carbon storage realized as a result of grass cover plantings that were undertaken on or after January 1, 1999.

[0063] Market will specify project eligibility, project baselines, quantification, monitoring and verification protocols.

Certified Emission Reductions (CERs) (Brazil)

[0064] Certified Emission Reductions will be issued to qualifying projects undertaken in Brazil. Qualifying projects will include: reforestation and/or assisted forest regeneration; avoided deforestation together with reforestation and/or assisted forest regeneration; fuel switching; landfill methane destruction; and renewable energy generation from solar, wind, small hydroelectric and biomass systems.

Certified Early Action Credit (CEACs)

[0065] Certified Early Action Credits (CEACs) will be issued to certain projects undertaken from 1995 through 1998. To qualify, projects must be: off-system; originally undertaken or financed by

Market Members; direct emissions reductions or involve sequestration; clearly owned by the Market Members; measured and verifiable; registered in 1605b, USUI, or an equivalent registry system.

[0066] CEACs can be used for compliance only by the Market Member that originally owned them.

[0067] Certified Early Action Credits will be given to the following project types that meet the eligibility criteria: reforestation, afforestation and avoided deforestation; landfill methane destruction in the U.S.; fuel switching and other energy related USUI projects.

[0068] Certified Early Action Credits will be issued on the basis of mitigation tonnage realized by the qualifying project during the years 1995 through 2006.

Electricity Purchase Opt-in Programs (EPOP)

[0069] Market Members sources not primarily engaged in the production of electricity may opt-in purchased electricity as a supplemental reduction objective. When this option is elected, reduction commitments for purchased electricity will be identical to the Market Emission Reduction Schedule (i.e. 1% below baseline in 2003, 2% below baseline in 2004, 3% below baseline in 2005, 4% below baseline in 2006). Market Members that elect this option will receive Greenhouse Gas Emission Allowances when the reduction objective is exceeded. When Market Members opt-in their electricity purchases and their electricity purchase reduction objective is not achieved the Member must surrender Greenhouse Gas Emission

[0070] Allowances and/or Certified Emission Offsets. The baseline electricity purchase quantity is defined as the average of electricity purchases during years 1998 through 2000. The baseline will be adjusted to reflect acquisition or disposition of facilities that consumed power purchased by the Market Member.

[0071] Market Members that opt-in electricity purchases and reduce their electricity purchases to levels below the quantity corresponding to the Market reduction schedule will be issued Greenhouse

Gas Emission Allowances at a rate of 0.61 metric tons CO₂ for each megawatt-hour by which actual power purchased is below the reduction schedule.

[0072] Market Members that opt in electricity purchases and realize electricity purchases in an amount that is above the quantity corresponding to the Market reduction schedule must surrender Greenhouse Gas Emission Allowances and/or Certified Emission Offsets at a rate of 0.61 metric tons CO₂ for each megawatt-hour by which actual power purchased is above the reduction schedule.

[0073] Consistent with the Economic Growth Provision¹, the maximum recognized increase in purchased power is 2% above baseline in 2003 and 2004, and 3% above baseline in 2005 and 2006.

[0074] The 0.61 metric ton rate is applied only to electricity purchased by U.S. facilities as it reflects the U.S. average emission rate for electricity production during 1998-2000. National average emission rates for Canada and Mexico will be applied to facilities in those countries.

[0075] The initial pool of GGEAs available to be issued to Market Members under this provision will be 0.1% of the program-wide emission baseline per year. If fully subscribed, this quantity would represent 4% of the four-year program-wide targeted emission reduction (which is defined as the program wide emission baseline minus the program-wide emission reduction target during 2003 through 2006).

Renewable Fuels

[0076] Emissions associated with combustion of the following renewable fuels will be excluded from Market Member's emission baseline and emission reports: wood, wood wastes and derived fuels; agricultural residues, grasses; landfill and agricultural methane.

Jointly Owned Facilities

[0077] Market Members will be responsible for emissions from jointly owned facilities in proportion to the Member's ownership equity share, subject to the following exceptions:

[0078] Market Members not primarily engaged in electric power production will have the option to exclude from their emissions baseline and emission reports emissions from facilities in which the Market Member's equity ownership share is less than 20%.

[0079] Exceptions will be made on a case-by-case basis if a Market Member's ownership share is less than 50% and emissions data from the jointly owned facility is not accessible to the Market Member.

[0080] Entities primarily engaged in electric power production will have the option to exclude from their emissions baseline and emission reports emissions from facilities in which the Market Member's equity ownership share is both less than 20% and represents less than 25 megawatts of generating capacity.

New Electric Power Generating Units

[0081] New electric power generating units are units placed into commercial operation on or after January 1, 2001. Each participating Market Member that operates one or more new electric power generating units will be allowed annually to exempt a quantity of emissions that is equivalent to the emissions of a 500 megawatt capacity natural gas combined cycle electricity generating plant operated at 55% of capacity and having a heat rate of 7,000 btu/mwh. The exempt emissions cannot exceed emissions from the new electric power generating unit or units. All new unit emissions above this level will be included as part of the Member's annual emissions.

Market Efficiency

Objectives

[0082] A limited number of Market constraints will be employed in order to assure that emission mitigation under the Market reflects a balance of emission reductions at Market Member facilities and reductions from off-system projects, and to prevent Market instability and price congestion. Adoption of these constraints reflects the limited scope and pilot nature of the Market. The Market

does not endorse the imposition of limits on trading or on the use of offsets in large scale GHG trading systems that may emerge in Market created by government regulation.

Single Firm Sales Limit

[0083] Sales of Greenhouse Gas Emission Allowances by any single Market Member will be limited to 15% of the program-wide targeted emission reductions, which is defined as the difference between the Market program wide emissions baseline, aggregated across all Market Members, and the annual program-wide emission reduction target. This quantity is equal to 1.5% of the program-wide emissions baseline, apportioned over 1-4 years according to the following schedule:

Year	Percent of program-wide baseline emissions that can be sold by a single firm
1	0.15%
2	0.30%
3	0.45%
4	0.60%
<i>Total 1.50% of program-wide baseline emissions</i>	

[0084] Allowed sales by a single firm will be escalated if program-wide emissions rise above baseline levels. The Escalation Mechanisms' will reflect the extent to which program-wide mitigation demand (defined as program-wide emissions minus the program-wide emission reduction target) exceeds program-wide targeted emission reductions (defined as the program-wide emission baseline minus the program-wide emission reduction target).

Use of Certified Emission Offsets and Certified Early Action Credits

[0085] Program-wide use of Certified Emission Offsets plus Certified Early Action Credits will be allowed in an amount equal to 50% of the program-wide targeted emissions reductions. This quantity is equal to 5% of the total program wide-baseline emissions, apportioned over 1-4 years according to the following schedule:

Year	Total allowed use of Certified Emission Offsets' plus Certified Early Action Credits as a percent of program-wide baseline emissions
1	0.5%
2	1.0%
3	1.5%
4	2.0%
	Total 5.0% of program-wide baseline emissions

[0086] The total program-wide quantity of Certified Early Action Credits used for compliance in any year will not exceed 50% of the total quantity of Certified Emission Offsets plus Certified Early Action Credits used for compliance.

[0087] Total allowed usage of Certified Emission Offsets plus Certified Early Action Credits will be escalated if program-wide emissions rise above baseline levels. The Escalation Mechanisms' will reflect the extent to which program-wide mitigation demand (defined as program-wide emissions minus the program-wide emission reduction target) exceeds program-wide targeted emission reductions (defined as the program-wide emission baseline minus the program-wide emission reduction target).

Offsets from Owned and Operated Facilities

[0088] No Market Member will be allowed to sell Certified Emission Offsets (e.g. Certified Landfill Offsets) produced by facilities that it owns and/or operates in an amount exceeding 10% of the program-wide targeted emission reductions (which is defined as the program-wide emission baseline minus the program-wide emission reduction target). This quantity is equal to 1.0% of the total program wide-baseline emissions, apportioned over 2003-2006 according to the following schedule:

Year	Percent of program-wide baseline emissions that can be sold as CEOs* by Market Members with owned and operated facilities
1	0.1
2	0.2%
3	0.3%
4	0.4%
<i>Total 1.0% of program-wide Baseline emissions</i>	

[0089] Allowed sales by a single Market Member will be escalated proportionately if program-wide emissions rise above baseline levels. The Escalation Mechanisms will reflect the extent to which program-wide mitigation demand (defined as program-wide emissions minus the program-wide emission reduction target) exceeds program-wide targeted emission reductions (defined as the program-wide emission baseline minus the program-wide emission reduction target).

Exchange Governance

[0090] Standing Committees comprised of Market Members will be formed for the purpose of providing oversight of specific Market functions. Additional Committees may be formed as necessary.

Exchange Executive Committee

[0091] The Exchange Executive Committee will have the following responsibilities: oversee the affairs of the exchange; receive and act upon recommendations from other Market Committees; address any unresolved issues emerging from other Committees; establish additional Committees as necessary.

Committee on Certified Emission Offsets

[0092] The Committee on Certified Emission Offsets will have the following responsibilities: recommend additional project types and locations for Market, eligibility and develop rules for such projects; consider recommending automatic recognition of CEOs from mitigation realized by

approved Clean Development Mechanism projects; provide guidance on the project registration process; provide oversight for the registration of projects undertaken in locations that are not initially eligible for CEOs; monitor the diversity of registered project types and propose methods for maintaining diversity as necessary; develop methods for apportioning the use of registered CEOs and CEACs by individual Market Members should the total quantity of these instruments used for compliance exceeds the quantities established by the Market constraints described above.

Committee on Market Efficiency

[0093] The Committee on Market Efficiency will have the following responsibilities: monitor Market operations and identify actions that may be needed to enhance Market performance and avoid congestion; oversee the periodic expansion of the Market with a view to assuring efficient Market performance.

Committee on Compliance

[0094] The Committee on Compliance will have the following responsibilities: serve as a peer group to monitor compliance with exchange rules; evaluate violations of exchange rules and recommend responses; establish rules and oversee implementation of emissions and project verification, audits and inspections; may provide dispute resolution services.

[0095] It will be apparent that the present invention has been described herein with reference to certain preferred or exemplary embodiments. The preferred or exemplary embodiments described herein may be modified, changed, added to, or deviated from without departing from the intent, spirit and scope of the present invention.

We claim:

1. A method of trading green house gases as substantially shown and described.

Figure 1 - Relationships Between the CCX Registry Accounts, the Emissions Database, and Traders

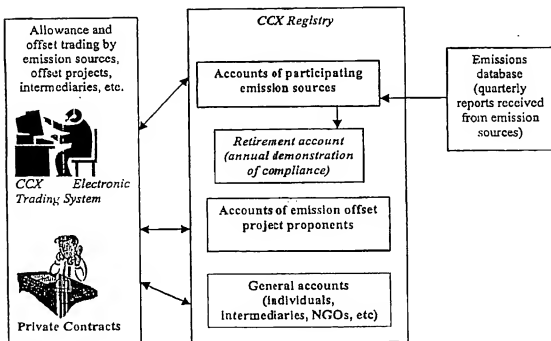


Figure 2 - Overview of Annual CCX Auctions

